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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/534,232

12/12/2005

Itsuki Kobata

2005-0751A

3364

513 7590 09/23/2009

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EXAMINER

WILKINS III, HARRY D

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,232	Applicant(s) KOBATA ET AL.	
	Examiner Harry D. Wilkins, III	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 1-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 47-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/6/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group III (claims 47-62) in the reply filed on 20 July 2009 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 47-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 47 recites a step of "stopping" and a step of "allowing", however, there is no claimed relationship in time between the two steps. From a review of Applicant's specification, and claim 52, it appears that in claim 47, the step of "allowing" occurs after the "stopping" step. Thus, claim 47 will be examined based upon the assumption that the "allowing" step reads as follows: "allowing the processing electrode and the workpiece to make a relative movement for a given length of time after stopping the application of the voltage". Proper clarification of the time relationship between the "stopping" and "allowing" steps is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Kobata et al (US 2003/0132103, published 17 July 2003) is the US publication of the "371" application which was the national stage entry of the PCT application published as Kobata et al (WO 02/103771, published 27 December 2002). The WO application was published in English and designated the United States, such that the effective filing date of the US publication under 35 U.S.C. 102(e) is the filing date of the PCT application, or 21 February 2002. Additionally, the WO publication qualifies as prior art against the present application under 35 USC 102(a). Thus, two headings are used below to reject the claims due to the qualification of both references as prior art under different sections of 35 U.S.C. 102.

6. Claims 53-62 are rejected under 35 U.S.C. 102(a) as being anticipated by Kobata et al (WO 02/103771).

7. Claims 53-62 are rejected under 35 U.S.C. 102(e) as being anticipated by Kobata et al (US 2003/0132103).

[For ease of reference, all citations come from the US Patent Application Publication of Kobata et al.]

Kobata et al teach (see figure 5) an electrolytic processing apparatus having an electrode section (48) including a plurality of electrodes (processing electrode 50, feeding electrode 52), a holder (46) for holding a workpiece (W) capable of bring the workpiece close to or into contact with the electrodes, a power source (80) to be

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connected to the electrodes of the electrode section, a partition member (56) disposed such that it can make contact with the surface of the workpiece, a liquid supply section (74) for supplying a liquid between the partition member and the workpiece, and a drive section (as indicated by various arrows showing rotation) for allowing the electrode section and the workpiece to make a relative movement.

Regarding the recitation of “wherein application of a voltage ...” at the end of claim 53, the recitation is noted, but such recitation applies to the manner in which the apparatus is operated. See MPEP 2114. As such, this claim feature has not been given patentable weight beyond the bounds that the apparatus needs to be capable of operating in the claimed fashion. Hence, because each individual part of the apparatus of Kobata et al was individually controllable, such that the apparatus of Kobata et al could have been operated in the claimed fashion, Kobata et al is considered to anticipate these claims.

Regarding claims 58 and 62, Kobata et al teach (see paragraph 55) that the apparatus included an end point monitor, which was capable of determining an amount of processing. Thus, the monitor of Kobata et al is considered a processing amount measurement section.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 47-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobata et al (WO 02/103771 or US 2003/0132103) in view of Duboust et al (US 2003/0136684) and Sato et al (US 2003/0104762).

The teachings of Kobata et al are described above.

In particular, Kobata et al teach (see figure 5 and paragraphs 146, 147, 153, 155-157 and 175-178) electrolytically processing a surface of a workpiece (W) by providing a processing electrode (50) and a feeding electrode (52) for feeding electricity to the workpiece, applying a voltage between the processing electrode and the feeding electrode, allowing a liquid and a partition member (56) to be present between the processing electrode and the workpiece, allowing the workpiece (W) to be close to the processing electrode (5) and allowing the workpiece and the processing electrode to make a relative movement (as indicated by arrows in figure 5). Kobata et al teach stopping the application of the voltage after a predetermined amount of processing had occurred ("end point of processing"). At the time the voltage is stopped, the relative movement is also ceased, and the workpiece is removed from the processing electrode.

Thus, Kobata et al fail to teach application of the relative movement for a given length of time after the application of the voltage is stopped.

Duboust et al teach (see abstract and paragraphs 66 and the sequence described in paragraphs 67-76) that in other known ECMP methods that involve detection of an end point, polishing may be continued after the initial detection of the end point to ensure adequate removal of metal residue.

Sato et al teach (see abstract, figure 4 and paragraphs 17 and 56-62) a process for planarization of a workpiece including alternating steps of CMP and electropolishing, with a final CMP step after detection of the polishing endpoint. The overpolishing CMP step is done to remove the tantalum nitride barrier layer.

Therefore, in view of the teachings of both Duboust et al and Sato et al of performing some form of over polishing after detection of the polishing end point, particularly in Sato et al where the over polishing occurs without application of a voltage, one of ordinary skill in the art would have found it obvious to have allowed the processing electrode and workpiece of Kobata et al to continue to be subjected to relative movement for a given time after the stopping of the voltage to permit some amount of the art known step of over polishing, to either ensure adequate removal of metal residue or to help remove the tantalum nitride barrier layer.

Regarding claim 52, it would have been within the expected skill of a routineer in the art to have determined a proper amount of time to occur for the over polishing step as suggested by Duboust et al and Sato et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

hdw